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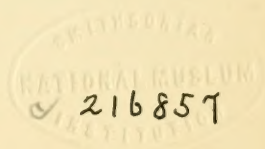
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DAMAGE TO TELEPHONE AND TELEGRAPH
POLES BY WOOD-BORING INSECTS.

BY

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DAMAGE TO TELEPHONE AND TELEGRAPH POLES BY WOOD-BORING INSECTS.¹

By T. E. SNYDER,
Agent and Expert.

It has recently been determined through special investigations conducted by the Bureau of Entomology, in cooperation with telephone and telegraph companies, that serious and extensive damage is being done in certain localities to standing poles by wood-boring insects. The object of this circular is to give information on the principal as well as other types of insect injury to poles, so that line inspectors may distinguish the various types and determine and report on the character and extent of the damage.

CHARACTER OF THE INJURY.

The principal injury to the poles consists in large mines in the wood near the line of contact with the ground, necessitating the frequent resetting or even the replacement of the damaged poles. These irregular mines (fig. 1) run both transversely and longitudinally throughout the heartwood, and are sometimes 7 inches long, but vary in length. This injury is usually in the outer layers of the wood for a distance of from 2 to 3 feet below and sometimes from 1 to 2 feet above the line of contact of the pole with the surface of the ground. The greatest damage is to that area just below and just above the surface of the ground; here the conditions of air and moisture are most favorable. The mines, often very close together, completely honeycomb the wood in a zone from 3 to 4 inches in from the exterior of the poles (fig. 3); this so weakens the poles that they break off close to the surface of the ground. The basal 2 feet is

¹ Revised extracts from Bulletin 94, Part I, Bureau of Entomology, U. S. Department of Agriculture, 1910.



FIG. 1.—Work of the pole borer (*Parandra brunnea* Fab.) in an untreated chestnut pole: *a*, Gallery of the pole borer, showing pupal chamber with the entrance plugged with excelsior-like wood fibers; work near base of pole, below ground. *b*, Mines of the pole borer near surface of ground. Natural size. (Author's illustration.)

usually sound. Even if the damage is not serious enough to cause the poles to break off under strain, they are likely to go down during any storm, and thus put the wire service out of commission; such damaged poles are a serious menace along the right of way of railroads. Poles that appear sound on the exterior may have the entire basal interior riddled, and the damage is not noticed until the poles break off. If merely isolated poles are injured so as to cause them to break off, they simply lean over, but if several adjacent poles are affected, especially where there is any unusual strain, that portion of the line is very likely to go down.

THE PRINCIPAL INJURIOUS SPECIES.

The principal injurious species is the chestnut telephone-pole borer, or pole borer,¹ which is an elongate, creamy-white, wrinkled,

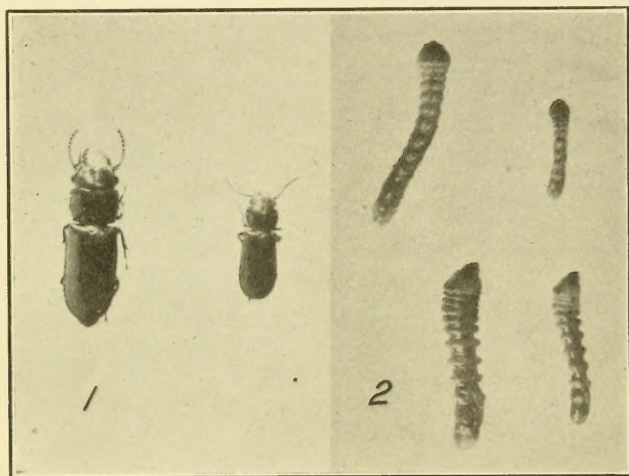


FIG. 2.—1, The pole borer: Male and female beetles. 2, The pole borer: Young larvae. 1, Slightly enlarged; 2, twice natural size. (Author's illustration.)

round-headed grub or larva (fig. 2, 2). It hatches from an egg deposited by an elongate, mahogany-brown, shiny, flattened, winged beetle, from two-fifths to four-fifths of an inch in length (fig. 2, 1). It appears that the eggs are deposited from August to October in the outer layers of the wood of the pole near the surface of the ground. The young borers, upon hatching, excavate shallow galleries in the sapwood, then enter the heartwood, the mines being gradually enlarged as they develop. As they proceed they closely pack the fine boring dust behind them. This peculiar semidigested boring dust, which is characteristic of their work, is reddish to dun-

¹ *Parandra brunnea* Fab. Since the publication of Bulletin 94, Part I, of this Bureau, this borer, first found to be injurious to chestnut telephone poles, has been found injurious to arborvitæ poles, and as it also injures telegraph poles, the name "pole borer" is more appropriate and comprehensive.

nish yellow in color and has a claylike consistency. The burrows eventually end in a broad chamber, the entrance to which is plugged with excelsiorlike fibers of wood. Here is formed the resting stage, or pupa, which transforms to the adult beetle. Often all stages, from very young grubs only about one-fourth inch long to full-grown grubs over 1 inch long, pupæ, and adults in all stages to maturity are present in the same pole. Adults have been found flying from July to September.

The insect attacks poles that are perfectly sound, but will work where the wood is decayed; it will not, however, work in wood that is "sobby" (wet rot), or in very "doty" (punky) wood. It has not yet been determined just how soon the borers enter the poles after they have been set in the ground. However, poles that had been

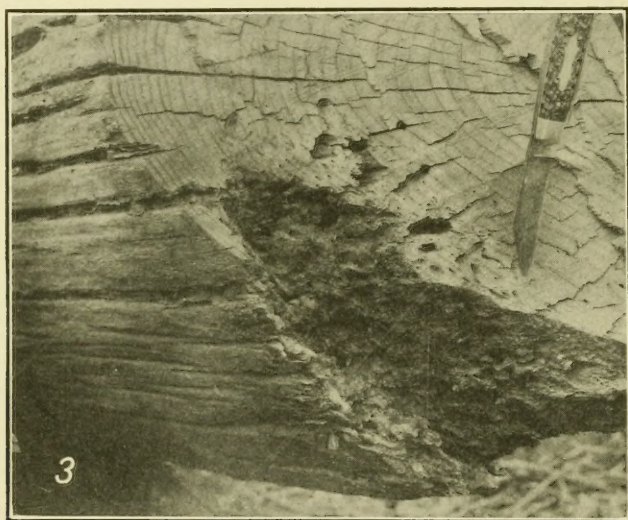


FIG. 3.—Damage to an untreated chestnut telegraph pole near surface of ground by the pole borer. (Author's illustration.)

standing only four or five years contained larvæ and adults of this borer in the heartwood, and poles that had been set in the ground for only two years contained young larvæ in the outer layers of the wood.

The presence of the borers in injurious numbers can be determined only by removing the earth from about the base of the pole; the large holes made when the adults come out are found near the line of contact with the soil. Often large, coarse borings of wood fiber project from these exit holes. Sometimes the old dead parent adults are found on the exterior of the poles underground. During August the young adults may be found in shallow depressions on the exterior of poles below the ground surface.

INJURY BY OTHER INSECTS.

It is not to be concluded that injury by the pole borer is the only type of insect damage to poles. Indeed, a very common injury is by white ants, or termites. In lines from 10 to 12 years old serious damage by these insects occurred in as high as 15 per cent of the poles, and their work is often present, at least superficially, in as high as 75 per cent of the poles under all conditions of site. The damage, however, is usually to the outer layers of the wood, where it is moist or there is incipient decay, and is more superficial and localized than that of the pole borer. Nevertheless, the sound heartwood of poles is often completely honeycombed, especially at the base. The work of white ants is found both in sound wood, "doty" wood, and "sobby" wood. Sometimes a large channel runs up through the core of the heart and the sides are plastered with clay, forming a hollow tube with several longitudinal interior galleries. Their work often extends from 2 to 4 feet above the surface of the ground. They leave the outer shell of the wood intact and work up through the longitudinal weathering checks, covering the exterior of the pole with earth to exclude the light. White ants will damage poles that have been set in the ground only two years. Evidently they enter the pole from below the surface of the ground.

Injury by a giant round-headed borer is sometimes found in chestnut poles. The large mines of this borer are found in the sound and decayed wood of poles. Often where there is rot present the heartwood near the surface of the ground is completely honeycombed by this borer.

Longitudinal weathering checks in chestnut poles are often widened, and other defects enlarged by large, black carpenter ants and other smaller black ants, which thus hasten decay.

KNOWN EXTENT OF THE DAMAGE.

The pole borer has seriously damaged as high as 10 to 15 per cent of the chestnut poles which have been set in the ground for from 10 to 12 years in lines in North Carolina, Virginia, West Virginia, Maryland, and the District of Columbia. It has only recently been determined that it has also seriously damaged a considerable proportion of the arborvitæ¹ telephone poles in part of a line in Illinois. It is evident, then, that this insect is an important factor in decreasing the normal length of service of chestnut and arborvitæ poles.

POSSIBILITIES OF PREVENTING DAMAGE TO POLES.

Methods of treating poles superficially by brushing with various preservatives have proved to be temporarily efficient in keeping out wood-boring insects, if the work is thoroughly done and not

¹ *Thuja occidentalis*.

only the butt, but also the basal area, is treated. If the pole is not thoroughly brushed, the pole borer and other insects enter through the untreated or imperfectly treated portions, especially through weathering checks and knots. Where the base is left untreated, insects, especially white ants or termites, enter the pole from below ground and, avoiding the treated portions, come right up through the pole.

Impregnating the poles with creosote by some standard process (either by the open-tank or by a cylinder-pressure process) will keep out wood-boring insects. In the open-tank method only the area most subject to the attacks of wood-boring insects (i. e., the basal 8 feet) is treated, while by the cylinder-pressure processes the entire pole is impregnated.

Therefore, to effectually protect poles from the depredations of wood-boring insects it is recommended that they be impregnated with creosote by either the "open-tank" process or by a cylinder-pressure process.

Approved:

JAMES WILSON,

Secretary of Agriculture.

WASHINGTON, D. C., *January 24, 1911.*



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